How Does Denver Make Drinking Water?

Denver Water has three treatment plants that process water collected from the areas shown above. Denver Water's three treatment plants have a combined maximum treatment capacity of 645 million gallons per day. Two treatment plants, Foothills and Marston, process water from the South Platte collection system. The third plant, Moffat treats water from the Moffat collection system.

The treatment process begins with the addition of "coagulants" to the raw water. These coagulants are commonly referred to as Alum and Polymer. Alum is aluminum sulfate a chemical that attaches to 'dirt' and other particles in the water. Through a process of slow mixing, the particles collide and stick together to make them larger. The larger particles are called "floc". Polymer strengthens the floc making it easy to filter in later processes. These now larger particles settle to the bottom of the sedimentation basin and the clarified water at the top of the basin is then sent to coal and silica sand dual media filters for filtration. Filtration further cleanses the water and removes microscopic debris. Each treatment plant aims for extreme clarity of the water, evidenced by low turbidities (a measure of clarity). Less than 0.10 turbidity units is a measure of clear, clean water. Potassium Permanganate or Carbon may also be added to control excess manganese or odors, respectively.

After filtration, the water is sometimes supplemented with a small amount of sodium silica fluoride to bring the total concentration of fluoride up to 0.90 mg/L. Caustic soda controls the pH, acidity/alkalinity of the water. It is added to adjust the pH of the water to between 7.5 S.U and 8.0 S.U. Finally, the water is thoroughly disinfected with a solution consisting of chlorine and a small amount of ammonia to form the final disinfectant called "chloramine."